OFFICIAL APRIL 2011 UPDATE SUBMISSION TO THE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION UNDER THE STATE BROADBAND DATA AND DEVELOPMENT GRANT PROGRAM FOR THE STATE OF ILLINOIS

April 2011

TABLE OF CONTENTS

COVER LETTER

April 2011

Ms. Anne W. Neville
SBDD Grant Program Director
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW Room 4716
Washington, DC 20230

Dear Ms. Neville:

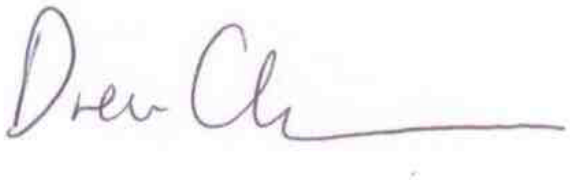
Please accept this submission from the Partnership for a Connected Illinois (PCI), the Designated Entity for Illinois.

These artifacts should be found to be compliant with the April 1, 2011, deadline for the semi-annual data update and in accordance with the terms of the July 1, 2009, Notice of Funds Availability (NOFA) and all subsequent clarifications.

This cycle, PCI assumed full responsibility for the data-collection activities from broadband providers in the State. Assuming this role is vital to achieve the State's goals with regard to improving broadband access and adoption – and which are in turn central objectives of the Partnership for a Connected Illinois. All facets of this data-collection transition, and the activities that flowed from it, are included in the narrative that follows.

If you have any questions about this Data Narrative, please do not hesitate to contact me, at 217-816-4151.

Respectfully submitted,



Drew Clark
Executive Director
Partnership for a Connected Illinois, Inc.

THE TRANSITION IN ACTIVITIES FROM CONNECTED NATION TO PARTNERSHIP FOR A CONNECTED ILLINOIS

During the data submission cycle ending on April 1, 2011, the Partnership for a Connected Illinois (PCI) took major steps in its three-fold mission to collect and publish broadband data, to ensure broadband access throughout the State, and to maximize broadband's impact. This data narrative, of course, focuses on the data-collection and publication activities of PCI.

In these efforts, PCI assumed full responsibility for the data-collection activities from broadband providers in the State. Assuming this role is vital to achieve the State's goals with regard to improving broadband access and adoption – the other two core missions of PCI. In 2010, PCI had worked together with a subcontractor, Connected Nation, in performing this function for the data-collection cycles that ended on March 31, 2010, and on October 8, 2010. As part of the transition from Connected Nation to PCI, in 2011 PCI established its own Non-Disclosure Agreements (NDAs) with broadband providers for confidential information. PCI also collected updated information from providers throughout the State. The NDA used by PCI did not differ from the NDA used by Connected Nation. However, Connected Nation was not willing to provide PCI with the confidential information that Connected Nation collected on behalf of the Partnership for a Connected Illinois. Therefore, PCI had to obtain NDAs in its own name with providers.

However, our subcontractor Connected Nation did provide PCI with the non-confidential broadband provider information at the Census block level on November 30, 2010. As a result of obtaining this data, PCI undertook to re-build and re-launch the broadbandillinois.org web site. PCI did this in approximately six weeks' time, or on February 17, 2011. This consumer-friendly interface allows for residents of the State to intuitively access the information collected by PCI – and provides the ability to "crowdsource" the collection of price information, actual speed data, and to let consumers verify the data provided by broadband providers. Further information about the broadbandillinois.org web site will be discussed later in this data narrative.

PROVIDER OUTREACH BY PCI

Beginning on February 2, 2011, all providers were sent requests to reestablish a Non-Disclosure Agreement between PCI and the provider. Since PCI would now be collecting the data in-house without the assistance of Connected Nation, it was necessary to start this process from the beginning. Of the 164 providers included in the data package, PCI has managed to execute an NDA with 90 of these organizations during this two-month span. As part of the same request, every provider was asked whether or not they had new data, as of December 31, 2010, that they would be including in our April 1, 2011, submission. Similar requests were sent on February 16, March 2, and March 9. As providers responded, they were no longer included as part of these mass requests. Multiple phone calls were made to those providers who did not respond to the e-mail communications.

The entire process was tracked on Salesforce, PCI's project management tool. When an NDA was established with a provider, the date that NDA was established was recorded on Salesforce. A field in Salesforce was also populated as to whether or not the provider would be submitting new data for this Cycle 3 submission. If a provider responded with no change to the data, PCI removed priority from that provider and refocused attention on those providers who reported that there was a change to their data as of December 31, 2010. PCI wanted to establish the NDAs by focusing on those providers with new data to submit.

Of these 90 providers with whom PCI entered into an NDA , 33 also provided changes to their data in the form of new towers, speed changes, etc. Additionally, two new providers were added to the dataset: Cornbelt Communications and Wireless Data Net. Two other providers, Hughes Network Systems, LLC & WildBlue Communications, Inc. provided satellite data. That satellite information was not included as part of the geodatabase. A total of 37 providers established NDAs with Connected Nation for previous submissions and an additional 30 providers provided data to Connected Nation in a previous cycle of data submission. However, these providers were unresponsive to multiple attempts in February and March. These providers will receive much attention for the Cycle 4 submission by PCI. The table below summarizes the status of NDA's among providers included in this submission.

Total number of providers included in this submission	164
NDA executed with PCI in this cycle	90
NDA executed and data provided with Connected Nation in previous cycle, unresponsive in this cycle	37
Data acquired in previous cycles from Connected Nation without NDA, unresponsive in this cycle.	30
Provider reported no update to data, and no NDA was executed	5
New provider included for this submission	2

Throughout the month of March, the PCI data team formatted data as it was received. A cutoff date of March 21, 2011, was established for the acquisition of new data to include in this submission. A total of nine providers provided data after this date. That will be included in the next submission.

The table below summarizes the status of data among providers.

Total number of providers included in this submission	164
Data acquired in previous cycles from Connected Nation, unresponsive in this cycle.	67
Provider reported no update to coverage area.	53
Provider reported and provided an update to coverage area that was included in this cycle.	33
Provider reported and provided an update to coverage area after cutoff date for data included in this cycle.	9
Provider reported and provided satellite data. It was not submitted due to additional information being necessary to show where service is available in the State, rather than submitting the entire State boundary as serviceable area.	2

DATA ACQUISITION: ILLINOIS COMMUNITY ANCHOR INSTITUTIONS

PCI has established an ongoing procedure for gathering data on the physical location and broadband connectivity of Community Anchor Institutions (CAIs) in accordance with the data requirements of the SBDD NOFA Technical Appendix.

As with the October 8, 2010, submittal, PCI identified existing, centralized sources for CAI connectivity data. With the assistance of Southern Illinois University, PCI geocoded each submitted data point by using ESRI software and Google batch geocoding programs.

Both carrier and price information were requested, and the speed test became a required item for completion of the survey. For the CAI survey, we utilized the speed test(s) currently being administered on the Federal Communications Commission web site.

The total number of CAIs stands at 26,559. Notwithstanding this relatively high number, PCI has made an effort to refine the survey process to identify priority CAIs within each category, and to collect connectivity data for these locations.

As an example, of the 26,869 locations submitted in October, there were 14,000 Category 3 Healthcare locations which were geocoded, yet had no connectivity data. Many of these were for actual practitioners as opposed to clinics, or what might be considered institutions. PCI will reevaluate the necessity of including these in our Cycle 4 submission. While we have elected to include this larger number for the October filing, we have also identified 1,358 priority Healthcare locations, which include hospitals, clinics and other significant facilities.

Smaller adjustments in Categories 4 and 5 have resulted in a total of 12,051 CAI institutions within the PCI priority list.

Category 6 also requires some explanation. Data for the 1,449 Governmental locations had been submitted as a set of existing connectivity data with a 100% response rate. These numbers have been included again in the October filing. This data was provided by the Illinois Century Network in a previous round, and PCI has continued to include the ICN data in all subsequent submissions.

Category	Total Number of CAIs in March 2011	Connectivity Data Points in March 2011	% of CAIs with Connectivity Data in March 2011	Total Number of CAIs in October Submission	Connectivity Data Points in October 2010	% of CAIs with Connectivity Data in October 2010
School - K through 12	5,604	1,417	25.29%	5,651	1,165	20.62%
Library	1,444	713	49.38%	1,505	633	42.06%
Medical/healthcare	15,267	138	0.90%	15,358	96	0.63%
Public safety	2,339	433	18.12%	2,360	384	16.27%
University, college, other	266	111	29.47%	307	116	37.79%
Other community support - gov	1,449	1,449	100.00%	1,454	1,454	100.00%
Other community support - non-gov	230	27	11.74%	234	19	8.12%
Totals	26,599	4,288	16.12%	26,869	3,867	14.39%

Outreach for this submission included survey development, web site database research and teleconferences. Together with the Illinois Department of Commerce and Economic Opportunity (DCEO), we have engaged in a process of working with CAIs on an organized basis. Other state agencies and organizations have included the Illinois Commerce Commission, Illinois Board of Education, and the Illinois State Police. Additional Agencies and organizations have been referenced throughout this presentation.

PCI has worked with a number of organizations in gathering data for the October submission in addition to those already identified in the March filing. We are encouraged that relationships with these organizations will continue to develop and facilitate our electronic data collection efforts in future filings. These organizations are listed below:

K-12	Illinois Association of Regional School Superintendents, Illinois State Board of Education
Libraries	Illinois Library Association
Healthcare	Illinois Critical Access Hospital Network, Illinois Rural HealthNet, Illinois Healthcare Association
Public Safety	Existing Database
Colleges & Universities	Illinois Community Colleges Board
Other Government	Existing Database
Other Non-Government	Man-Tra-Con

For Category 1, K-12, we have been working with Gil Morrison of the Illinois Association of Regional School Superintendents. A cover letter and link was sent to each of the Regional Superintendents with instructions to disseminate to the Technical Director for each their respective School Districts. From there, the Technical Director distributed the survey to each school location. PCI also worked with Kathy Barnhart of the Illinois State Board of Education in distributing the survey. Kathy distributed the survey to the fifteen Learning Technology Centers in the State of Illinois who then distributed the survey to the various school districts.

PCI had an existing database of email contacts for Category 2, Libraries in Illinois. We worked with the Illinois Library Association and found that generally the libraries were receptive to taking the survey, given need for broadband in the library sciences.

In Category 3, Healthcare, PCI worked with Pat Schou of the Illinois Critical Access Hospital Network and Alan Kraus of the Illinois Rural Health Network. Both organizations were referenced in our cover letter, and the survey was sent from PCI's email database. David Voepel, of the Illinois Health Care Association, also assisted in distributing the survey to Category 3 institutions which included long-term care facilities, nursing homes, and rehab facilities. The data that has been acquired through these two methods have been added to the database of community anchor institution data included in this submission.

For Category 4, Public Safety, surveys were also sent via the PCI database. As with the Libraries, the response from this category was favorable.

PCI worked with Elaine Johnson at the Illinois Community Colleges Board for Category 5, Universities and Colleges. A cover letter and link was sent to over 40 Community Colleges, with a very positive response. The remaining Category 5 surveys we sent via email.

For Category 6, Community Support-Government, the survey was distributed electronically via PCI's existing database.

For Category 7, Community Support-Non Government, PCI worked with Kathy Lively at Man-Tra-Con to disseminate the survey to Illinois WorkNet Centers. The remaining surveys were sent via our exiting email database.

In addition to the web sites included in our March submission, PCI utilized the following web sites to assemble relevant datasets:

Illinois High School Association	Illinois State Police
Illinois Elementary School Association	911 Fire Police Medical Web
Illinois Sheriffs' Association	Illinois Workforce Partnership
National Public Safety Information Bureau	American Hospital Association
National Center for Education Statistics	United States Fires Administration

Working with both organizations and regional outreach initiatives, PCI considers its CAI electronic survey effort to be a process of continually improving our existing database, methodology, and results obtained. Our goal is to collect and display CAI broadband data most relevant to the needs of Illinois residents.

SBDD Data Transfer Model Methodology

The submission of the broadband dataset for April 1, 2011 is contained within the SBDD Data Transfer Model. PCI has reviewed all literature that relates to the release and use of this data transfer model and recognizes that it does not replace or dictate how data is stored, processed, or displayed for the state, as it is meant primarily as a means to transfer the broadband data from all states and territories and populate the National Broadband Map in a seamless fashion.

Broadband service providers submitted coverage in terms of the areas that they served, either in direct geospatial formats, CAD files, or as paper maps. The submitted polygons were overlaid on the census block polygons and those blocks touching were selected and used. The proper speed tier categories were assigned as necessary. The carriers who submitted in this fashion has consistent speed categories over these blocks so further segmentation was not required.

In addition to the narratives and methodologies contained herein, as well as the DataPackage.xls containing contact information, the data dictionary, and a provider summary table, the following feature classes are submitted within the SBDD Data Transfer Model for the state of Illinois.

Inventory of Deliverables, Partnership for a Connected Illinois: April 1, 2011:

NOFA Requirement	Data Transfer Model	Data Description
Appendix A: 1(a)(i)	BB_Service_CensusBlock	Broadband Service Availability of Facilities-Based Providers in Census Blocks of No Greater Than Two Square Miles in Area
Appendix A: 1(a)(ii)	BB_Service_RoadSegment	Broadband Service Availability of Facilities-Based Providers by Road Segment in Census Blocks Larger in Area Than Two Square Miles
Appendix A: 1(b)	BB_Service_Wireless	Broadband Service Availability of Wireless Services Not Provided to a Specific Address

Appendix A: 3(b)	BB_ConnectionPoint_MiddleMile	Broadband Service Infrastructure Middle-Mile and Backbone Interconnection Points
Appendix A: 4	BB_Service_CAInstitutions	Community Anchor Institutions-Listing

The provider data collected by PCI on behalf of the State of Illinois have been formatted per the given specifications and uploaded into the appropriate feature classes of the SBDD Data Transfer Model. Wireline availability is contained within census blocks and road segments. Wireless availability is contained as polygons of coverage areas. Middle-mile connections and community anchor institutions are contained as point data. The subscriber weighted nominal speed (if available) is contained within the overview feature class. All speed data is contained at the census block, road segment, or wireless polygon level of availability. All efforts have been made to comply with formatting, domain, and metadata requirements to include as much information as possible.

All carrier coverage data that was unchanged since the October 8, 2010, submission was validated by Connected Nation using the validation methods below.

ILLINOIS FIELD VALIDATION NARRATIVE (CONNECTED NATION)

John Determan (Sr. WiMAX Engineering Consultant), Layne Wagner (Technical Engineering Analyst) and Chip Spann (Director of Engineering and Technical Services) were tasked with field verification and data validation for some of the 166 viable broadband providers that contributed data to the Partnership for a Connected Illinois broadband inventory map. After analyzing the mix (40 ILECs, 20 cable modem providers, 12 FTTx providers, 97 fixed wireless operators, 32 backhaul providers and 6 mobile wireless companies), 13 broadband providers were randomly selected for field validation activities. Upon the conclusion of testing at 28 test locations, the current data validation completion rate of 7.83% was achieved through July 28, 2010.

The results of the testing techniques affirmed that (i) 100% spectrum frequencies (as tested by an Avcom PSA-37XP spectrum analyzer) were accurate; (ii) 96.4% of the physical coordinates (tested using either a GPS enabled version of Microsoft Streets & Trips or a Garmin eTrex Summit GPS unit) were correct and, in cases where a discrepancy was discovered, they were presented to the appropriate provider and further verified/validated by the provider; and (iii) 100% of the mobile broadband speeds tested achieved the criteria as established for broadband (minimum of 768 kbps X 200 kbps). Mobile testing was conducted using a 3G smart phone and/or a 3G aircard.

As part of its verification testing, Connected Nation regularly completes random spectrum analysis studies throughout the state, cross-references antenna structure registration numbers and federal registration numbers against Federal Communications Commission databases, and strives not only to personally meet with participating broadband providers but to encourage them (whenever possible) to accompany Connected Nation engineers on these randomly selected test locations.

To date, these tests have included in-field validation for AT&T Mobility, Illinois Valley Cellular, XO – Nextlink, Clearwire, KeyOn Wireless, Heartland, Egyptian Telephone, Banicon, Comcast,

Geneseo, Volo Broadband, SparkPlug Wireless and Cellular Properties. The compilation of tests on these companies covers fixed and mobile wireless, WiMAX, backhaul, DSL, and cable modem technologies representing a cross-cut from all applicable technology platforms (excluding satellite and broadband over power line).

ACCURACY AND VERIFICATION: METHODOLOGY - PROVIDER VALIDATION (CONNECTED NATION)

Broadband providers maintain their service area data in many different formats, all in varying levels of complexity and granularity. In order to ensure that the data required by the NTIA is standardized across all providers and that it is as accurate as possible, Connected Nation translates and formats the data that providers are able to supply into a GIS shapefile and produces maps for the provider to review. The resulting map(s) and review process allow for providers to see their service area in a geographic format – for some providers, this is the first time they have seen maps of their broadband service area. Having the mapped service area allows providers to quickly identify any issues that appear in the data representation, whether the issue is in the data translation into a GIS format or from the original data collection and submission. Often data is provided from various sources and through the review and revision process, local engineers who operate the networks and work in the field are able to ensure that the tabular data that has been submitted is accurate and represents the real-world network extent. Any issues in how the service area is represented on the map(s) are remedied by Connected Nation, whether they are additions, removal of service, or any other revisions. Revised maps of service area representations are sent to the provider for review and approval; Connected Nation will revise data and return maps as many times as necessary until the provider is in agreement that the map represents their service area as accurately as possible. Once the review process has been completed and final approval of the data is provided, the data is deemed ready for NTIA submission.

Once the data collection has been aggregated to a statewide level, static maps of statewide and county-level availability are produced and made publicly available. In addition, consumers can visit the interactive online tool, BroadbandStat, to create customized views of broadband service areas and analyze corresponding demographic information. Leveraging broadband service data on various platforms allows for public users, providers, and other stakeholders to review, scrutinize, and provide feedback on the represented data. This feedback becomes a validation method in itself as consumers submit inquiries to Connected Nation either affirming where service is not available or identifying areas where broadband service is shown on the map, but in actuality is not available. This allows for a follow-up to providers regarding revisions to the data as it is represented; it also allows for Connected Nation to identify locations where on-site visits may be necessary to complete field validation of available services. Public feedback on all forms of mapping products serves as a localized validation method for provider-supplied information and allows Connected Nation to resolve inaccuracies as they are identified to ensure that only the highest quality information is provided to stakeholders.

WIRELESS METHODOLOGY

In addition to the wireless approach deployed in 2010, for this cycle, many fixed wireless providers allowed us to use their tower locations, antenna heights and direction/spread of coverage to derive coverage areas. With the provided tower information, professionally prepared radio frequency coverage studies were conducted and converted to shape file format. These studies have proven to be very accurate and represent service areas where the maximum advertised speeds can be delivered. These studies take in to account full consideration for terrain and tree clutter data.

We do note two interesting trends in the wireless data. First, there appears to be some variation on how the NOFA coverage definition is met. In other words, there seems to be a disparity on the necessary strength (e.g. -80 dB, -98 db, -120 dB, etc) to provide the appropriate quality of service for data services and still be able to deliver the maximum advertised speeds.

METADATA

Metadata, which literally means data about data, represent PCI's attempt to document procedures, coding, and overall methodology used in managing broadband supply data. Both short and long terms goals of developing PCI's metadata are to improve communication on Geographic Information Systems (GIS) data management issues for both internal and external partners. PCI's metadata is organized and structured around Federal Geographic Data Committee (FGDC) standards associated with key information impacting the following issues:

- What GIS data layers are managed by an organization?
- How is data coded or classified in assisting outside partners or organization use the GIS data developed?
- When was the data developed and how often is it updated?
- Who developed the data layers and who should be contacted if anyone has questions?

The net result of developing PCI's metadata connects to the idea of communication and standards. When applied correctly over time PCI's metadata will assist in educating other users on essential questions needed when applying GIS data. In addition, it will assist PCI internally as metadata will help the organization identify and document critical developing issues shaping data development. Any new employee or organization will be pointed to metadata files when asking questions relating to methodology, attribute codes, dates of data edits or updates, and follow-up contact information within PCI's data team.

METHODOLOGY FOR THE BROADBANDILLINOIS.ORG WEB SITE

As mentioned above, on February 17, 2011, the Partnership for a Connected Illinois launched its new web site, featuring an easy graphical interface for accessing PCI data about broadband providers with a single mouse click or touch on a smart phone. In this first, initial version, the web site offers a broadband location finder with detailed service provider information and assessments of internet speeds, as well as locations of community broadband providers.

Clicking on the home page map opens a side panel with broadband providers. Expanded results also show the libraries, schools, and public building in the area with broadband. As the State-designated entity under the NTIA's State Broadband Data and Development, PCI provides, on http://broadbandillinois.org, the same data that it submits to the NTIA for inclusion in the national broadband map. Additionally, PCI has begun to collect actual speed and price information, using the new web site.

PCI built the web site is built around open and transparent data-sharing tools. As with the national broadband map, PCI aims to encourages user feedback as a means of helping to improve and promote broadband in Illinois. For example, the site's "Get It" section encourages citizens to get involved with Broadband Illinois eTeams. These community leadership groups are working to help connect rural residents and others throughout Illinois. The site's "Use It" is beginning to assemble materials that pertain to broadband adoption.

THE APPLICATION PROGRAMMING INTERFACE FOR BROADBAND ILLINOIS DATA

PCI's web site is built around an open source Application Program Interface. This free tool allows software developers to build upon, and add to, the data on http://broadbandillinois.org. Below is the documentation for the PCI's API, which is available at http://developer.broadbandillinois.org.

Using Your API Key
http://developer.broadbandillinois.org/providers.xml?api_key=XXX&param1=value1…

Download documentation as XML file:
http://developer.broadbandillinois.org/docs.xml

API Query: Provider Query

Input
URL: http://developer.broadbandillinois.org/providers.xml

Input Parameters

Parameter Name	Parameter Type	Description
api_key	string	The API key of the user requesting the data. Must match an existing API key of an approved, active user.
area_key	string	For a known area search, the specific area being searched. This must be used in conjunction with an area_kind parameter. Each area_kind has a different requirement for specification.

Parameter Name	Parameter Type	Description
		• congressional_district The two digit district number (include leading zero, like "07") • county The three digit county FIPS number (with leading zeroes, ie Cook County is "031") • county_subdivision The five digit COUSUBFP number (Chicago is 14000) • tract The four or six digit tract number • block_group Two digit state code + three digit county code + four or six digit tract code + one digit block group number • zip_code The 5 digit zip code
area_kind	string	For a known area search, the type of area being searched. Must be used in conjunction with the area_key parameter. • congressional_district A congressional district (2000 boundaries) • county County • county_subdivision A subdivision of a county • tract A US census tract • block_group A US census block group • zip_code A Postal Service Zip Code
lat	float	Latitude of the query. Must be used in conjunction with lon.
lon	float	Longitude of the query. Must be used in conjunction with lat.
radius	float	Radius of the area being searched, in meters. This parameter is optional, if not set, the value 0.1 will be used. This parameter is only valid in a lat/lon query.
wkt	string	A WKT (Well Known Text) Polygon or Multipolygon in projection 4326 that will act as the boundary for the search.

Response

<providers>
<provider>
.....
</provider>
</providers>

Field Name	Field Type	Source	Description
blockid	integer	Broadband	Identifier for the census block containing the search point. The 2000 census data is used.
blocksubgr	integer	Broadband	Identifier for the census block subgroup containing the search point. If there is no subgroup, the value will be "nil".
county_name	string	Broadband	The name of the county containing the search point.
countyfips	integer	Broadband	The FIPS identifier for the county containing the search point.
dbaname	string	Broadband, Wireless	The provider's Doing Business As (DBA) legal designation.
frn	string	Broadband, Wireless	FCC Registration Number of the provider.
fullfipsid	integer	Broadband	The full FIPS id containing the searchpoint, containing the state, county, tract, and block ids, in that order, for example: 170010001001007, made up of statefips: 17, countyfips: 001, tract: 000100, and block: 007.
max_speed_down	string	Broadband, Wireless	The text value corresponding to maxadown.
max_speed_up	string	Broadband, Wireless	The text value corresponding to the maxadup code.
maxaddown	integer	Broadband, Wireless	A code representing the maximum download speed of the connection. • 1 Less than or equal to 200 kbps. • 2 Greater than 200 kbps and less than 768 kbps.

Field Name	Field Type	Source	Description
			• 3 Greater than or equal to 768 kbps and less than 1.5 mbps. • 4 Greater than or equal to 1.5 mbps and less than 3 mbps. • 5 Greater than or equal to 3 mbps and less than 6 mbps • 6 Greater than or equal to 6 mbps and less than 10 mbps. • 7 Greater than or equal to 10 mbps and less than 25 mbps. • 8 Greater than or equal to 25 mbps and less than 50 mbps. • 9 Greater than or equal to 50 mbps and less than 100 mbps. • 10 Greater than or equal to 100 mbps and less than 1 gbps. • 11 Greater than or equal to 1 gbps.
maxadup	integer	Broadband, Wireless	A code representing the maximum upload speed of the connection. See "maxadown" for the list of possible values.
provname	string	Broadband, Wireless	The name of the provider.
reseller	boolean	Broadband	Field value is 1 if the provider is a reseller, 0 if it is not.
spectrum	integer	Wireless	A code for the wireless spectrum used by the provider. • 1 Cellular spectrum (824-849 MHz; 869-894) used

Field Name	Field Type	Source	Description
			to provide service • 2 700 MHz spectrum (698-758 MHz; 775-788 MHz; 775-788 MHz) used to provide service • 3 Broadband Personal Communications Services spectrum (1850-1915 MHz; 1930-1995) used to provide service • 4 Advanced Wireless Services spectrum (1710-1755 MHz; 2100-2155) used to provide service • 5 Broadband Radio Service/Educational Broadband Service spectrum (2496-2690 MHz) used to provide service • 6 Unlicensed (including broadcast television \"white spaces\") spectrum used to provide service • 7 Specialized Mobile Radio Service (SMR) (817-824 MHz; 862-869 MHz; 896-901 MHz; 935-940 MHz) • 8 Wireless Communications Service (WCS) spectrum (2305-2320 MHz; 2345-2360 MHz), 3650-3700 MHz • 9 Satellite (L-band, Big LEO, Little LEO, 2 GHz) • -9 Unknown
spectrum_name	string	Wireless	The text description of the spectrum code for this provider.

Field Name	Field Type	Source	Description
state_abbr	string	Broadband, Wireless	The postal abbreviation of the state containing the search point.
state_name	string	Broadband, Wireless	The name of the state containing the search point.
statefips	integer	Broadband, Wireless	FIPS identifier for the state containing the search point.
the_geom	WKT String	Broadband	The geomentric data for this provider, in WKT string format.
tract	integer	Broadband	Identifier for the census tract containing the search point. The 2000 census data is used.
transmission_technology_type	string	Broadband, Wireless	The text description corresponding to the transtech value.
transtech	integer	Broadband, Wireless	Enumerated type defining the type of technology used by the provider. • 0 All Other • 10 Asymmetric xDSL • 20 Symmetric xDSL • 30 Other Copper Wireline • 40 Cable Modem - DOCSIS 3.0 • 41 Cable Modem - Other • 50 Optical Carrier / Fiber to the End User • 60 Satellite • 70 Terrestrial Fixed Wireless - Licensed • 80 Terrestrial Mobile Wireless • 90 Electric Power Line • -9999 Unknown / Did Not Provide
typical_speed_down	string	Broadband, Wireless	The text value corresponding to the typicdown code.

Field Name	Field Type	Source	Description
typical_speed_up	string	Broadband, Wireless	The text value corresponding to the typicdown code.
typicdown	integer	Broadband, Wireless	A code representing the typical download speed of the connection. See "maxadown" for the list of possible values.
typicup	integer	Broadband, Wireless	A code representing the typical upload speed of the connection. See "maxadown" for the list of possible values.

API Query: Report Query

Input
URL: http://developer.broadbandillinois.org/report.xml

Input Parameters

Parameter Name	Parameter Type	Description
api_key	string	The API key of the user requesting the data. Must match an existing API key of an approved, active user.
area_key	string	For a known area search, the specific area being searched. This must be used in conjunction with an area_kind parameter. Each area_kind has a different requirement for specification. • congressional_district The two digit district number (include leading zero, like "07") • county The three digit county FIPS number (with leading zeroes, ie Cook County is "031") • county_subdivision The five digit COUSUBFP number (Chicago is 14000) • tract The four or six digit tract number • block_group Two digit state code + three digit county code + four or six digit tract code + one digit block group number • zip_code The 5 digit zip code

Parameter Name	Parameter Type	Description
area_kind	string	For a known area search, the type of area being searched. Must be used in conjunction with the area_key parameter. • congressional_district A congressional district (2000 boundaries) • county County • county_subdivision A subdivision of a county • tract A US census tract • block_group A US census block group • zip_code A Postal Service Zip Code
lat	float	Latitude of the query. Must be used in conjunction with lon.
lon	float	Longitude of the query. Must be used in conjunction with lat.
radius	float	Radius of the area being searched, in meters. This parameter is optional, if not set, the value 0.1 will be used. This parameter is only valid in a lat/lon query.
wkt	string	A WKT (Well Known Text) Polygon or Multipolygon in projection 4326 that will act as the boundary for the search.

Response

<providers>
<provider or anchors (for CAI aggregation)>
.....
</provider or anchors (for CAI aggregation)>
</providers>

Field Name	Field Type	Source	Description
dbaname	string	provider only	The provider's Doing Business As (DBA) legal designation.
download_speed	nested field	CAI only	Measured download speed for CAI sources. Nested fields as in max_upload_speed.
frn	String	provider only	FCC Registration Number of the provider.

<table>
<tr><th>Field Name</th><th>Field Type</th><th>Source</th><th>Description</th></tr>
<tr><td>jitter</td><td>nested field</td><td>CAI only</td><td>Measured jitter for CAI sources. Nested fields as in max_upload_speed.</td></tr>
<tr><td>latency</td><td>nested field</td><td>CAI only</td><td>Measured latency for CAI sources. Nested fields as in max_upload_speed.</td></tr>
<tr><td>max_download_speed</td><td>nested field</td><td>provider and CAI</td><td>The maximum download bandwidth. Nested fields as in max_upload_speed.</td></tr>
<tr><td>max_upload_speed</td><td>nested field</td><td>provider and CAI</td><td>The maximum upload bandwidth
<table>
<tr><td>high</td><td>integer</td><td>The code corresponding to the highest record for this carrier. Codes are as in maxadown</td></tr>
<tr><td>high_text</td><td>string</td><td>The text description of the code for high.</td></tr>
<tr><td>low</td><td>integer</td><td>The code corresponding to the lowest record for this carrier. Codes are as in maxadown</td></tr>
<tr><td>low_text</td><td>string</td><td>The text description of the code for low.</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Field Name</th><th>Field Type</th><th>Source</th><th>Description</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td>median</td><td>integer</td><td>The code corresponding to the median record for this carrier. Codes are as in maxadown</td></tr>
<tr><td>median_text</td><td>string</td><td>The text description of the code for median.</td></tr>
</table>
</td></tr>
<tr><td>record_count</td><td>integer</td><td>provider and CAI</td><td>The number of individual records making up the aggregate data. Note that the data for broadband providers has been pre-split into census block sized chunks, which results in high number of individual records for large areas.</td></tr>
<tr><td>spectrum</td><td>integer</td><td>provider only</td><td>A code for the wireless spectrum used by the provider.
1 Cellular spectrum (824-849 MHz; 869-894) used to provide service
2 700 MHz spectrum (698-758 MHz; 775-788 MHz; 775-788 MHz) used to provide service
3 Broadband Personal Communications Services spectrum (1850-1915 MHz; 1930-1995) used to provide service
4 Advanced Wireless Services spectrum (1710-1755 MHz; 2100-2155) used to provide service
5 Broadband Radio Service/Educational Broadband Service spectrum (2496-2690 MHz) used to provide service
6 Unlicensed (including broadcast</td></tr>
</table>

Field Name	Field Type	Source	Description
			television \"white spaces\") spectrum used to provide service • 7 Specialized Mobile Radio Service (SMR) (817-824 MHz; 862-869 MHz; 896-901 MHz; 935-940 MHz) • 8 Wireless Communications Service (WCS) spectrum (2305-2320 MHz; 2345-2360 MHz), 3650-3700 MHz • 9 Satellite (L-band, Big LEO, Little LEO, 2 GHz) • -9 Unknown
spectrum_text	string	provider only	The text description of the spectrum code for this provider.
transmission_technology_type	string	provider only	The text description corresponding to the transtech value.
transtech	integer	provider only	Enumerated type defining the type of technology used by the provider. • 0 All Other • 10 Asymmetric xDSL • 20 Symmetric xDSL • 30 Other Copper Wireline • 40 Cable Modem - DOCSIS 3.0 • 41 Cable Modem - Other • 50 Optical Carrier / Fiber to the End User • 60 Satellite • 70 Terrestrial Fixed Wireless - Licensed • 80 Terrestrial Mobile Wireless • 90 Electric Power Line • -9999 Unknown / Did Not Provide
typical_download_speed	nested field	provider only	The typical download bandwidth. Nested fields as in max_upload_speed.
typical_upload_speed	nested field	provider only	The typical upload bandwidth. Nested fields as in max_upload_speed.

Field Name	Field Type	Source	Description
upload_speed	nested field	CAI only	Measured upload speed for CAI sources. Nested fields as in max_upload_speed.

API Query: Community Anchor Institutions

Input
URL: http://developer.broadbandillinois.org//community_anchors

Input Parameters

Parameter Name	Parameter Type	Description
api_key	string	The API key of the user requesting the data. Must match an existing API key of an approved, active user.
area_key	string	For a known area search, the specific area being searched. This must be used in conjunction with an area_kind parameter. Each area_kind has a different requirement for specification. • congressional_district The two digit district number (include leading zero, like "07") • county The three digit county FIPS number (with leading zeroes, ie Cook County is "031") • county_subdivision The five digit COUSUBFP number (Chicago is 14000) • tract The four or six digit tract number • block_group Two digit state code + three digit county code + four or six digit tract code + one digit block group number • zip_code The 5 digit zip code
area_kind	string	For a known area search, the type of area being searched. Must be used in conjunction with the area_key parameter. • congressional_district A congressional district (2000 boundaries) • county County • county_subdivision A subdivision of a county • tract A US census tract • block_group A US census block group

Parameter Name	Parameter Type	Description
		• zip_code A Postal Service Zip Code
lat	float	Latitude of the query. Must be used in conjunction with lon.
lon	float	Longitude of the query. Must be used in conjunction with lat.
max_responses	integer	If this value is an integer greater than zero, the number of responses will be limited to that value. There is no guarantee that a particular potential response will be in that group.
priority_only	string	If this value is a truthy string ("1", "t", "true", "yes", "y"), then the output will be limited to CAI institutions labelled priority only
radius	float	Radius of the area being searched, in meters. This parameter is optional, if not set, the value 0.1 will be used. This parameter is only valid in a lat/lon query.
wkt	string	A WKT (Well Known Text) Polygon or Multipolygon in projection 4326 that will act as the boundary for the search.

Response

<community_anchor_institutions>
<community_anchor_institution>
.....
</community_anchor_institution>
</community_anchor_institutions>

Field Name	Field Type	Description
ad_down	integer	Synonym for maxaddown
ad_down_text	string	Synonym for max_speed_down
ad_up	integer	Synonym for maxadup
ad_up_text	string	Synonym for max_speed_up
additional_bandwidth	boolean	If true, the user was dissatisfied with their service, and desires additional bandwidth

Field Name	Field Type	Description
additional_connections	boolean	If true, the user was dissatisfied with their service, and desires additional connections
affordable_rates	boolean	If true, the user was dissatisfied with their service and wants more affordable rates
alternative_carrier	boolean	If true, the user was dissatisfied with their service, and wants to use a different carrier
alternative_technology	boolean	If true, the user was dissatisfied with their service, and desires a different technology
broadband_adoption	boolean	If true, the internet speed of the CAI has met the NTIA's definition of broadband.
carrier_derived	boolean	If true, the carrier name has been derived from the IP address
city	string	City where institution is located
contact_email	string	Email address of contact at the anchor institution
contact_name	string	Name of contact at the anchor institution
county	string	The county where the institution is located
district	string	For K-12 schools, the school district name, otherwise blank.
download_speed	integer	Actual download speed derived from user tests
e_team	boolean	If true, the institution is interested in becoming an E-Team member.
email	string	General email address of the institution
improved_service	boolean	If true, the user was dissatisfied with their service, and wants better customer service
institution_type	integer	The type of institution
institution_type_text	string	The text value corresponding to the institution type

Field Name	Field Type	Description
ip_address	string	The ip address of the CAI
jitter	integer	Jitter measurement for user tests
last_mile	string	The provider of the last mile of infrastructure
latency	integer	Latency time from user tests
latlon	wkt string	The geographic location of the institution
max_speed_down	string	Text description corresponding to maxaddown
max_speed_up	text	Text description corresponding to maxadup
maxaddown	integer	A code representing the maximum download speed of the advertised connection. • 1 Less than or equal to 200 kbps. • 2 Greater than 200 kbps and less than 768 kbps. • 3 Greater than or equal to 768 kbps and less than 1.5 mbps. • 4 Greater than or equal to 1.5 mbps and less than 3 mbps. • 5 Greater than or equal to 3 mbps and less than 6 mbps • 6 Greater than or equal to 6 mbps and less than 10 mbps. • 7 Greater than or equal to 10 mbps and less than 25 mbps. • 8 Greater than or equal to 25 mbps and less than 50 mbps. • 9 Greater than or equal to 50 mbps and less than 100 mbps. • 10 Greater than or equal to 100 mbps and less than 1 gbps. • 11 Greater than or equal to 1 gbps.
maxadup	string	A code representing the maximum download speed of the advertised connection. Keys as in maxaddown
organization	string	Community Anchor Institution names

Field Name	Field Type	Description
priority_institution	boolean	If true, the institution is a priority to contact
provider	string	The name of the institution's broadband provider
rate	float	Monthly charge from the carrier
response_date	date	The date the institution's record was added to the system.
response_method	string	The survey site used for the institution's response.
service_comments	string	Any additional comments from the user about their service
service_satisfactory	boolean	If true, the user finds their current service satisfactory
short_time_frame	boolean	If true, the user was dissatisfied with their service, and wants a shorter time frame to extend their service
speed_derived	boolean	If true, speed was derived from the IP address
state	string	State where institution is located
street_address	string	Street address of institution
technology_comments	string	Additional comments, if any
transmission_technology_type	string	Text value corresponding to transtech
transtech	integer	Enumerated type defining the type of technology used by the provider. • 0 All Other • 10 Asymmetric xDSL • 20 Symmetric xDSL • 30 Other Copper Wireline • 40 Cable Modem - DOCSIS 3.0 • 41 Cable Modem - Other • 50 Optical Carrier / Fiber to the End User • 60 Satellite • 70 Terrestrial Fixed Wireless - Licensed

Field Name	Field Type	Description
		• 80 Terrestrial Mobile Wireless • 90 Electric Power Line • -9999 Unknown / Did Not Provide
upload_speed	integer	Actual upload speed derived from user tests
zip	string	Zip code where institution is located

API Query: Geometries Query

Input

URL: http://developer.broadbandillinois.org/geometries/(area_kind)/(area_key).xml

Input Parameters

Parameter Name	Parameter Type	Description
api_key	string	The API key of the user requesting the data. Must match an existing API key of an approved, active user.
area_key	string	The specific area being requested. This must be used in conjunction with an area_kind parameter. Each area_kind has a different requirement for specification. • congressional_district The two digit district number (include leading zero, like "07") • county The three digit county FIPS number (with leading zeroes, ie Cook County is "031") • county_subdivision The five digit COUSUBFP number (Chicago is 14000) • tract The four or six digit tract number • block_group Two digit state code + three digit county code + four or six digit tract code + one digit block group number • zip_code The 5 digit zip code • census_block The full FIPS id for the census block
area_kind	string	The type of area being requested. Must be used in conjunction with the area_key parameter. • congressional_district A congressional district (2000

Parameter Name	Parameter Type	Description
		boundaries) • county County • county_subdivision A subdivision of a county • tract A US census tract • block_group A US census block group • zip_code A Postal Service Zip Code • census_block A US census block

Response

<named_area>
.....
</named_area>

Field Name	Field Type	Description
area_key	string	The specific area.
area_kind	string	The type of area.
kml	string	The KML representation of the area geometry.

BROADBANDSTAT METHODOLOGY

BroadbandStat is an online, interactive mapping tool for viewing, analyzing, and validating broadband data. Developed through a partnership with ESRI, the market leader in geographic information system (GIS) software, BroadbandStat is a multi-functional way for local leaders, policymakers, consumers, and technology providers to devise a plan for the expansion and adoption of broadband. Connected Nation launched BroadbandStat at http://connectillinois.org on February 24, 2010. The Partnership for a Connected Illinois is in the process of re-launching BroadbandStat on http://broadbandillinois.org.

CONCLUSION

The transition from the data-submission process by Connected Nation to the work engaged in by the Partnership for a Connected Illinois for the data-submission cycle ending April 1, 2011, occasioned a large degree of work on the data-collection mission of PCI. Building upon the strong foundation established in this data cycle, PCI's efforts will increasingly incorporate "best practices" for data-submission in future cycles.